



Supercritical fluid extraction
– adding value through advanced
processing technologies

Supercritical extraction is a high-tech industrial process that uses highly compressed or liquefied gases as solvents to produce high value extracts from biologically-based raw materials.

It is the logical choice for producing high value, solvent residue-free extracts for use in the pharmaceutical, cosmeceutical, nutraceutical and food ingredient industries.

Examples of processes IRL has developed include antimicrobials from plants, polyunsaturated fatty acids from marine and botanical sources, complex lipids from dairy, marine and animal origin as well as the downstream extraction of lipids from fermentation biomass. We have also designed and built laboratory to pilot scale supercritical extraction plant, including our portable plant, SuperEx.

Benefits include

- ▶ No solvent residues
- ▶ Simultaneous extraction and fractionation/purification
- ▶ Extracts that are regarded as “nature identical”
- ▶ Retention of biological activity and minimal product degradation, particularly for products such as polyunsaturated oils and complex lipids.

IRL scientists have been active in supercritical extraction since 1986 and have extracted or processed more than 300 different raw materials. As the leading supplier of research, development and consulting in supercritical extraction in the southern hemisphere, we have global recognition and strong links with several reputable supercritical extraction companies.

Key expertise

- ▶ World-first patented antisolvent and alternative extraction gas technology
- ▶ Portable pilot scale extraction available for off-site use to aid scale up and product/process development. Full training included
- ▶ Development of advanced processing technologies integrating chemical engineering and supercritical extraction processes to obtain new products and processes, including antisolvent fractionation
- ▶ Application of dimethylether as an extraction solvent, especially for the extraction of complex lipids; and bioactives from wet feedstocks
- ▶ Process development for supercritical extraction processes from laboratory to commercial scale, including identification and quantification of extracts and active ingredients
- ▶ Consulting services on product, process and scale-up feasibility for commercial scale supercritical extraction
- ▶ Design of supercritical extraction plants from laboratory to pilot scale.

Recent patent applications

- ▶ Development of a supercritical antisolvent fractionation process for the production of high value polyunsaturated oils (PCT/NZ03/0062)
- ▶ Production of an antimicrobial and antioxidant extract for a commercial cosmeceutical product (NZ530834)
- ▶ Fractionation of complex lipids (WO2007123424)
- ▶ Extraction of highly unsaturated lipids using liquid DME (WO2007136281).

For all enquiries please contact the Industry Engagement team on 0508 CALL IRL (0508 225 5475). If calling from overseas phone +64 4 931 3000 or visit the *Contact Us* page on our website.

www.irl.cri.nz

Industrial Research Limited, 69 Gracefield Road, PO Box 31-310, Lower Hutt 5040, New Zealand